Title	Lumbar spinal stenosis treated by conventional microsurgical laminotomy or endoscopic interlaminar decompression: cost-analysis to decision-making
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radiodensity measured in HU may have an application in implant failure prediction. Surgical tactics may also influence a stability of pedicle screw fixation. The necessity of destabilizing decompression especially in groups ASIA E should be assessed thoroughly because laminectomy could be a significant contributing factor for implant instability development. Under restored alignment resulting in residual kyphotic deformity of over 10° is also a significant factor for implant failure development. Patients who are at risk of implant related complications may benefit from ALIF procedure by getting decreased load on pedicle screw system, nevertheless further studies with secondary effects assessment are required to work-up optimal strategy for traumatic injuries treatment.

A082: Lumbar Spinal Stenosis Treated by Conventional Microsurgical Laminotomy or Endoscopic Interlaminar Decompression: Cost-Analysis to Decision-Making

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Introduction: Lumbar spinal stenosis (LSS) is one of the commonest spine conditions worldwide especially in the over-65 age group.[1] Patients with LSS requiring operation generally have good clinical response after decompression surgery.[2-4] Two of the most commonly used techniques include endoscopic interlaminar decompression and conventional microscope assisted decompression, which have had comparative randomized controlled trials.[5, 6] Both procedures however appear to have similar clinical and radiological outcomes. In this modern age, the raised accumulative costs to patients and healthcare infrastructure are of concerns for the successful implementation of certain newer surgical approach into routine practice by healthcare providers. This study aims to provide comparison of full-endoscopic interlaminar decompression (MIS) versus conventional microsurgical decompression for LSS via cost analysis. **Material and Methods:** A decision-tree model comparing MIS and conventional microsurgical decompression for patients with LSS over a one-year time horizon was conducted. All patients were subjected to risk of complication, and the respective complication rate for MIS and conventional surgery were taken from two prospective randomized controlled trials (RCTs) by Komp and Ruetten.[5,6] Re-operation only applied to the following complications: epidural hematoma, inadequate decompression or iatrogenic instability requiring fusion. Complications like infection or dural tear required only the respective use of antibiotics or dural patch. Relevant unit costs associated with each surgical procedure and each possible complication treatment were estimated from expert input by local orthopaedic surgeons and were retrieved from the Department of Orthopaedics and Traumatology at affiliated hospitals. Costs associated with radiology, hospitalizations, outpatient, and physiotherapy visits were based on the latest charges to non-entitled persons for use of health services in the public sector. **Results:** The average total costs for MIS and conventional microsurgical decompression were found to be HKD$56 459.0 and $52 802.0 respectively. With the general ward hospitalization, radiology and routine follow-up visits being of the same cost for both surgical approaches, the 6.5% (HKD$3657.0) difference in total cost was largely due to the difference at the unit cost of surgery, as well as in the treatment for any complication. For the unit cost at operating theater for surgery, MIS costs 8.1% (HKD$2690.0) higher than the conventional microsurgical decompression. Since the complication rates found in the large-scale RCTs were 10.6% and 3.1% for MIS and conventional decompression respectively, the calculated cost of treatment for complication was HKD$2673.0 for conventional decompression, being 26.6% less than that for MIS (HKD$3640.0). **Conclusion:** Health economic evaluation is a necessary component in guiding spine surgery decision-making nowadays. Debate between open procedures and minimally invasive procedures for LSS has been ongoing. Our findings indicate the average total cost is higher for MIS, due to both the higher unit cost with surgical procedure as well as the treatment required for any complication, especially for cases where inadequate decompression needing a wider laminectomy after the index surgery. Surgeons can effectively decide on either surgical procedure, taking into consideration the cost-analysis findings, in addition to difference in clinical outcomes if any. In view of the learning curve with endoscopic procedures, continued use of an open, conventional technique can still be justified.

References

1. Deyo RA, Mirza SK, Martin BI, et al. Trends, major medical complications, and charges associated with surgery for lumbar spinal stenosis in older adults. *JAMA* 2010;303:1259-65.
2. Malmivaara A, Slatis P, Heliovaara M, et al. Surgical or nonoperative treatment for lumbar spinal stenosis? A randomized controlled trial. *Spine (Phila Pa 1976)* 2007;32:1-8.
3. Weinstein JN, Tosteson TD, Lurie JD, et al. Surgical versus nonoperative treatment for lumbar spinal stenosis four-year results of the Spine Patient Outcomes Research Trial. *Spine (Phila Pa 1976)* 2010;35:1329-38.
4. Weinstein JN, Tosteson TD, Lurie JD, et al. Surgical versus nonsurgical therapy for lumbar spinal stenosis. *N Engl J Med* 2008;358:794-810.
5. Komp M, Hahn P, Oezdemir S, et al. Bilateral spinal decompression of lumbar central stenosis with the full-endoscopic interlaminar versus microsurgical laminotomy technique: a prospective, randomized, controlled study. *Pain Physician* 2015;18:61-70.
6. Ruetten S, Komp M, Merk H, et al. Surgical treatment for lumbar lateral recess stenosis with the full-endoscopic interlaminar approach versus conventional microsurgical technique: a prospective, randomized, controlled study. *J Neurosurg Spine* 2009;10:476-85.